SOUTHWEST FISHERIES SCIENCE CENTER
FOURTH QUARTER REPORT-FY 2003

For the Period July 1 - September 30, 2003

Submitted By: Lab Director/Division Director/Group Chief: Norman Bartoo, Acting Division Director, Fisheries Resources Division

Title of Accomplishment or Milestone: Produce time-referenced categorization of bottom substrate at Tanner Bank.

Current Status of Accomplishment or Milestone: White abalone were surveyed on Tanner Bank during a July 2002 cruise on the NOAA ship David Starr Jordan. White abalone were surveyed using a Remotely Operated Vehicle (ROV) equipped with a video camera and surface recording equipment. The video record from the survey was reviewed and categorized, by bottom substrate and relative abundance of brown and red alga, for all survey effort and 198 abalone (188 white abalone) sightings.

Background Information: The white abalone, *Haliotis sorenseni*, was listed as an endangered species on May 29, 2001. The white abalone recovery team has recommended surveys to determine the exact status of the species in the wild and to locate areas of suitable habitat for future enhancement of the population. Categorization of bottom substrate and food sources will allow analysis to identify suitable habitat, and provide more accurate estimates of abundance.

Purpose of Activity: To determine the status of white abalone in the wild and provide baseline data for recovering the population of this endangered species.

Description of Accomplishment and Significant Results: Approximately 60 hours of video were categorized using a standardized classification scheme (*Greene et al*., 1999). Relative abundance of four brown alga, and three red alga were also scored and entered into a time-referenced digital database. The time-referenced records will be merged with geographical-referenced records to produce a data set for analysis of suitable abalone habitat using both multi-beam and side-scan sonar data.

An analysis of the abundance of red and brown alga near (< 5 meters) each abalone sighting was conducted from the video record. Abundance was scored as either absent, occasional, frequent, or abundant. Three categories of red alga: foliose (*Rhodymenia spp*.), geniculate (*Calliarthron spp*., and *Corallina spp*.), and encrusting (*Lithothamnium spp*.) were scored. Five categories of brown alga: *Laminaria farlowii, Agarum fimbriatum, Eisenia arborea, Dictyotaceae*, and combined were scored.

Red encrusting alga was present in every abalone sighting, but also in virtually all of the area we observed. *Calliarthron spp*., (probably *Calliarthron cheilosporioides*) was the most common geniculate red alga observed, although some *Corallina spp*. was also noted. Red geniculate alga was present in 79% of the abalone sighting and, while not as omnipresent as red encrusting alga, it was fairly common in many areas where we did not observe abalone. Red foliose alga was present in 45% of the white abalone sightings, primarily those in deeper waters where the brown alga was less abundant. Its apparent absence in 55% of the sightings may be real, or the result of difficulty in noting its presence in the presence of the larger brown alga.

Brown alga (primarily *Laminaria farlowii* and *Agarum fimbriatum*), were present in 88% of the abalone sightings. *Eisenia spp*., was only observed in 6% of the sightings, and *Dictyotaceae* in 9%, mostly in the deeper water.

A comparison of the relative abundance of combinations of alga, showed some correlations between categories. Red foliose and brown alga appear to be inversely correlated, although some brown alga was almost always present at abalone sightings. Red geniculate alga appears positively correlated with the presence of brown alga, especially where the former s abundance is occasional.

Significance of Accomplishment: Previous estimates of white abalone habitat have used an estimate of 3% of the sea floor between 25 and 65 m are rocky substrate resulting in a total rocky habitat of 752 ha between Pt Conception and the U.S.-Mexico border (Davis et al. 1998, Hobday and Tegner, 2000). Identification of suitable habitat for white abalone (substrate preference and available food resources), coupled with better maps of sea floor substrate, will aid in recovery efforts.

Problems: None

Key Contact: Chuck Oliver (858-546-7172).